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A COST ANALYSIS
OF A
NAVY DRUG ABUSE EDUCATION PROGRAM

by

Samuel W. Lewis

December, 1993

Principal Advisor: Professor William Gates

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This thesis is the study of the cost associated with expanding the Navy's drug abuse education program as a means of controlling the Navy's drug abuse problem. It focuses on the former Navy Drug and Alcohol Safety Action Program (NADSAP) now the Personal Responsibility and Values Education and Training (PREVENT) course.

The thesis asks the questions: What are the characteristics of the Navy's drug population? What are the costs/benefits of the Navy's Level III rehabilitation program? What are the costs of separating sailors who use illegal drugs? What are the costs/benefits of the Navy's drug education program?

In conclusion, the thesis proposes that the Navy's drug education program is the most cost-effective alternative and should be expanded. It also suggest that the appropriate mix of education, rehabilitation, and separation would balance the marginal benefits per dollar for each alternative.

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A Cost Analysis
of A
Navy Drug Abuse Education Program

by

Samuel W. Lewis
Lieutenant, United States Navy
B.A., University of Florida, 1986

Submitted in partial fulfillment
of the requirements for the degree of

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Author: Samuel W. Lewis
Samuel W. Lewis

Approved by: William Gates
William Gates, Principal Advisor

Gregory Hildebrandt
Gregory Hildebrandt, Associate Advisor

Reuben T. Harris for
David Whipple, Chairman
Department of Administrative Sciences

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This thesis is the study of the cost associated with expanding the Navy's drug abuse education program as a means of controlling the Navy's drug abuse problem. It focuses on the former Navy Drug and Alcohol Safety Action Program (NADSAP) now the Personal Responsibility and Values Education and Training (PREVENT) course.

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TABLE OF CONTENTS

I. INTRODUCTION 1

A. BACKGROUND 1

B. OBJECTIVES 3

C. THE RESEARCH QUESTION 3

1. Target Population 3

2. Costs 4

D. SCOPE, LIMITATIONS AND ASSUMPTIONS 4

1. Scope 4

2. Limitations 4

E. ORGANIZATION OF STUDY 5

II. METHODOLOGY 6

A. THE MODE: INDUCTION OR DEDUCTION 6

B. THE STRATEGY 7

1. Opinion Research 7

2. Archival Research 8

C. 1992 WORLDWIDE SURVEY 9

1. Sampling and Data Collection Procedures . . 9

D. ASSESSMENT OF NAVY ALCOHOL AND DRUG ABUSE EDUCATION AND TRAINING CURRICULA REVISION REQUIREMENTS 11

1. Program Description 11

2. Review Criteria 14
a. Accuracy 14
b. Consistency 14
c. Timeliness 14
d. Commonality 14
3. Interviews 14
4. Cost Analysis 15
E. COST BENEFIT STUDY OF THE NAVY'S LEVEL III ALCOHOL REHABILITATION PROGRAM 16
1. Methodology 16

III. DATA PRESENTATION/ANALYSIS 19
A. TARGET POPULATION 19
1. Unadjusted Data 19
2. Adjusted data 26
3. Socio-demographics 28
a. Air Force Substance Abuse Program vs Navy Substance Abuse Program 34
B. COST OF REHABILITATION 36
1. Level III Program Successes 36
2. Level III Program Outcomes 37
a. No Further Substance Abuse Incidents . . 38
b. Further Substance Abuse Incidents . . . 39
c. Not Recommended For Reenlistment 40
d. Data Summary 40

3. Costs of the Level III Rehabilitation Program 41
C. COSTS OF SEPARATION 43
1. Level III Program Benefits -- Avoided Replacement Costs 43
2. Replacement Costs 43
a. Selected Bonus Reenlistment Program Model 44
b. Application of SRB Model to Level III Treatment Successes 46
D. COST OF EDUCATION/PREVENTION 48
1. Personal Responsibility and Values Education and Training 48
2. Findings From Commanding Officers 49
a. Importance of NADSAP Objectives to Commanding Officers 49
b. Commanding Officer's Assessment of the Value of NADSAP 52
c. Education Costs 54

IV. CONCLUSIONS AND RECOMMENDATIONS 56
A. CONCLUSIONS 56
1. Characteristics of the Navy Drug Population 56
2. Cost of Separating Sailors Who Use Illegal Drugs 57

3. Cost/Benefits of the Navy's Level III Rehabilitation Program 58
4. Cost/Benefits of the Navy's Drug Education Program 59
B. RECOMMENDATION 60
C. Areas for Further Research 60
1. A Benefit Analysis of the Navy's Drug Policy 60
2. A Benefit Analysis of A Navy Drug Abuse Education Program 61
3. Navy Substance Program vs Air Force Substance Abuse Program 61

LIST OF REFERENCES 62

INITIAL DISTRIBUTION LIST 67

LIST OF FIGURES

Figure 1 M.C. Drug Use, Past 12 Months 20

Figure 2 Navy Drug Use, Past 12 Months 21

Figure 3 A.F. Drug Use, Past 12 Months 22

Figure 4 Army Drug Use, Past 12 Months 23

Figure 5 Estimates of Illicit Drug Use, Past 12 Months, Unadjusted and Adjusted for Socio-Demographic Differences 27

Figure 6 Any Illicit Drug Use, by Pay Grade, Total DoD 28

Figure 7 Any Illicit Drug Use for E1-E3s, by Service . 29

I. INTRODUCTION

A. BACKGROUND

Drug and alcohol abuse have serious short- and long-term consequences for health, including increased risk of accidents, morbidity, and mortality. For the general population, drug abuse is involved in more than 150,000 emergency room episodes per year and over 7,000 deaths from suicide or accidental overdose.[1] Approximately 20 percent of motor vehicle accidents each year are associated with drug use.[2] Alcohol is estimated to be a factor in 50 percent of accidents involving motor vehicles, 25 percent of fire-related incidents, 40 percent of falls, and 10 to 20 percent of aviation/marine accidents.[3] Military personnel that are heavy alcohol users and users of illicit drugs other than marijuana have more illnesses and days of hospitalization and

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[1]National Institute on Drug Abuse, *Annual Report, Data from the Drug Abuse Warning Network,* Ser. L, no. 9 (Rockville, Md., 1990). The actual number of drug-related deaths and emergency room episodes is much larger; the numbers cited here are from participating hospitals in 21 U.S. cities

[2]Trumble, Jeanne G. and Walsh, Michael J., "A New Initiative for Solving Age -Old Problems," *Alcohol Health and Research World 9*, 4 (1985), pp 2-5.

[3] Ibid.

are less involved in good health practices.[4] Military drug and alcohol abuse results in substantial work loss and performance deficits. Concerns about substance abuse attract attention when combat readiness is threatened or when public attention is focused on behavior that might endanger lives or threaten defense capabilities.

Because of these negative effects of drug and alcohol abuse, the Department of Defense has adopted comprehensive policies and programs to monitor, regulate, and/or eliminate drug and alcohol abuse among military personnel. These policies and programs, once directed specifically toward drug and alcohol abuse, are now included in a broader health promotion concept designed to improve the overall health and performance of military personnel. However, the health of the force continues to be reduced by drug and alcohol abuse.

The Department of Defense use several policies and programs to address illegal drug use. The Navy's objective is to find a cost effective program mix. This would enable the Navy to either maximize the reduction in drug use for a given budget or minimize the cost of reducing drug use to a predetermined level. With an unlimited budget, the Navy could eliminate all illegal drug use. Because funds are

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[4]Marsden, Mary E., Bray, Robert M., and Herbold, John R., "Substance Use and Health among U.S. Military Personnel: Findings from the 1985 Worldwide Survey," *Preventive Medicine*, vol. 17, 1988, pp 366-76.

constrained, the question becomes, what is the best use of the Navy's anti-drug budget?

B. OBJECTIVES

The objective of this study is to examine a few of the cost issues relating to drug programs in the Navy. More precisely, this thesis will compare three costs:

(1) the **costs of separating** a sailor who has a positive result on a urinalysis

(2) the **costs of rehabilitating** a sailor who has drug and/or alcohol abuse difficulty

(3) the **costs of educating** sailors about the dangers of drug and/or alcohol abuse.

C. THE RESEARCH QUESTION

The primary research question to be addressed is: Should the Navy expand its drug education program? Several other factors will be considered in the form of secondary research questions.

1. Target Population

One secondary question to be addressed is: "What are the characteristics of the Navy's drug population?"

This thesis will identify characteristics of the Navy population that is most likely to test positive on a urinalysis.

2. Costs

Additional costs will be surveyed and compared to the Navy's drug education program. In particular, as secondary research questions, this thesis will address:

a. What are the costs/benefits of the Navy's Level III rehabilitation program?

b. What are the costs of separating sailors who use illegal drugs?

c. What are the costs/benefits of the Navy's drug education program?

D. SCOPE, LIMITATIONS AND ASSUMPTIONS

1. Scope

This thesis will attempt to analyze only the **costs** of a Navy drug abuse education program. An analysis of the benefits of the program would be beyond the scope of this study.

2. Limitations

The primary limitation is the limited literature concerning the subject. Because of the Navy's "Zero-Tolerance" policy, very little has been written on the concept of drug abuse education in the Navy. The general attitude is that when recruits enter the Navy, they are mature enough to understand the dangers of drug and/or alcohol abuse. The Navy, therefore, believes there is a solid legal basis for discharging a sailor for a drug and/or alcohol offense.

E. ORGANIZATION OF STUDY

This chapter has introduced the reader to the topic of "A Cost Analysis of A Navy Drug Abuse Education Program"; chapter II will address the methodology used to collect and analyze the data. Chapter III will present the collected data and offer an analysis and interpretation. Chapter IV will contain conclusions and recommendations.

II. METHODOLOGY

A. THE MODE: INDUCTION OR DEDUCTION

An essential consideration in choosing a methodology is whether the project is inductive or deductive in nature. Induction is the process by which theory is generated; deduction is the process by which theory is tested.[5] If one does not have an answer to a question and is on a fact-finding mission, one is conducting inductive research. If one has what one believes to be an answer to a research question, but wishes to confirm or apply it through further testing, one is conducting deductive research.

Essentially, inductive research facilitates answers to these questions:

1. *Which-questions:* Which direction should we take? Which plan should we follow?
2. *Where-questions:* Where should we apply resources...?
3. *Why-questions:* Why did we select this alternative rather than another?
4. *Whether-questions:* Does it make a difference if we pursue this course of action rather than another?[6]

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[5]Buckley, J.W., Buckley, M.H., and Chiang, H.F., *Research Methodology & Business Decisions*, National Association of Accountants and The Society of Industrial Accountants of Canada, 1976.

[6]Ibid., p.22.

Because this study addresses several of these questions, it is categorized as *inductive* research.

B. THE STRATEGY

Stated in less formal terms, strategy is concerned with the way in which one goes about generating or testing theory. The following sections discuss the strategy used in conducting this study.

1. Opinion Research

If one seeks the views, judgements or appraisals of other persons regarding the research question, one is conducting *opinion* research. There are a variety of techniques appropriate to opinion research. Questionnaires and opinion polls are examples of the formal techniques used. This study uses the widely-employed informal technique of interviewing.

This technique, though simple and easy to administer, has some inherent problems. The principal difficulty is the effect on behavior caused by the interviewer. It has been shown that the race, age, religion, social class, and sex of the interviewer can have an effect on the person being interviewed.[7] During this study, a number of the persons

---

[7]Anthey, K.R., and others, "Two Experiments Showing the Effect of the Interviewer's Racial Background on Responses to Questionnaires Concerning Racial Issues," *Journal of Applied*

interviewed exhibited some uneasiness and apprehension throughout the interview.

2. Archival Research

Archival research is concerned with the examination of recorded facts. The *primary* archival domain deals with original documents or official files and records. *Secondary* archival sources are publications of data gathered by other investigators or researchers.

Archival research can also be formal or informal. Content analysis is a formal technique for evaluating written or oral communications. Statistical sampling is another formal technique used in secondary archival research. This study was conducted using the informal techniques of *scanning and observation*. The literature searches and library research conducted during this analysis fall into this category.

The advantage of using secondary archival research lies in the ability to access and manipulate a large quantity of condensed factual information. However, there are some problems associated with this type of research:

1. selective depositing
2. selective survival
3. selective retrieval

Psychology, v. 44, pp. 244-246, 1966. Also Katz, D., "Do Interviewers Bias Poll Results?," *Public Opinion Quarterly*, v. 6, pp. 248-268, 1942.

4. "filling in the gaps"

5. biases inherent in the researcher

6. skill-deficiencies of the researcher[8]

C. 1992 WORLDWIDE SURVEY[9]

The methodology of the 1992 Worldwide Survey was similar to the methodology used in the three previous Worldwide Surveys, all conducted by the Research Triangle Institute. The next section will describe the sampling and data collection procedures used.

1. Sampling and Data Collection Procedures

The 1992 Worldwide Survey was designed as a two-stage, two-phased cluster sample; the sample size was similar to the prior Worldwide Surveys (e.g., approximately 25,000 persons selected from 63 geographic locations worldwide). The eligible population for the survey consisted of all active-duty military personnel except recruits, Service Academy students, persons absent without leave (AWOL), and persons who had a permanent change of station (PCS) at the time of data collection.

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[8]Buckley, J.W., and others, *Research Methodology & Business Decisions*, National Association of Accountants and The Society of Industrial Accountants of Canada, 1976.

[9]Research Triangle Institute Report RTI/5154/06-17FR, *Highlights 1992 Worldwide Survey of Substance Abuse and Health Behaviors Among Military Personnel*, by R.M. Bray and others, December 1992.

The first-stage sample consisted of military installations (and associated units clustered with the installations based on geographical proximity) for each service located in four broad regions of the world (Americas, North Pacific, Other Pacific, Europe). The second-stage sample consisted of military personnel stationed at the selected first-stage installations who were randomly selected within pay-grades (E1-E4, E5-E6, E7-E9, W1-W4, O1-O3, O4-O10).

During Phase 1, which occurred during the six weeks from mid-April through May 1992, field teams administered questionnaires in group settings at selected installations across the world. At the sessions, team members explained the purpose of the survey, assured the respondents of anonymity, and encouraged cooperation and honest answers. Then they distributed optical-mark questionnaires to participants who completed and returned them. The teams shipped completed questionnaires to the scoring contractor for optical-scan processing.

During Phase 2, the field teams mailed questionnaires to eligible personnel who did not participate during Phase 1. With the questionnaires was an explanation of the purpose and anonymity, along with instructions to complete the questionnaire and to mail it in a business reply envelope (that was supplied) for processing. On average, the questionnaire required approximately 55 minutes to complete.

D. ASSESSMENT OF NAVY ALCOHOL AND DRUG ABUSE EDUCATION AND TRAINING CURRICULA REVISION REQUIREMENTS[10]

The following sections will describe the approach used to conduct the above-mentioned study. Included are brief descriptions of the courses of instruction studied, criteria used in the evaluation, types and sites of interviews, assumptions and constraints for the cost analyses, and procedures for reviewing similar Air Force and Army programs.

1. Program Description

The Navy has established a comprehensive substance abuse prevention program which involves several course offerings. Significant command initiative has been used in creating training and education programs which meet the Navy's Alcohol and Drug Abuse Program (NADAP) objectives.

Training courses and prevention programs support a three level approach to substance abuse prevention. The first level is prevention which is carried on through education programs conducted under contract and the command Drug and Alcohol Program Advisors (DAPAs). The second level involves out-patient care which is centered in a network of 65 Counseling And Assistance Centers (CAACs). The third level is resident rehabilitation, which takes place at three centers

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[10]Training Analysis and Evaluation Department Naval training Systems Center Technical Report 86-003, *Assessment of Navy Alcohol and Drug Abuse Education and Training Curricula Revision Requirements*, by W.A. Platt and J.J. Mathews, February 1986.

run by COMNAVMILPERSCOM and 24 centers run by the Naval Medical Command. With COMNAVMILPERSCOM assistance, various curriculum materials were collected and reviewed against evaluation criteria derived from their original tasking. Forty-four courses/programs were identified. Of these, 14 (see Table 1) encompass the bulk of NADAP personnel training or prevention programs. These courses were the basis of the study conducted by the Naval Training Systems Center. (Many courses or workshops exist to orient supervisory and leadership personnel as to their roles and responsibilities in the Navy drug and alcohol program. These were not included in the analysis.)

TABLE 1 ALCOHOL AND DRUG ABUSE CURRICULA IN ANALYSIS

Type	Title
Job Training	Visiting DoD Health Care Professionals (HCP) Courses on Alcoholism Basic Counselor Course Advanced Counselor Course Aftercare Program Manager (APM) Course Drug and Alcohol Program Advisor (DAPA) Course
Prevention	Navy Alcohol and Drug Substance Abuse Prevention (NADSAP) Program Substance Abuse Education in Accession Curricula Recruit Training NROTC Officer Indoctrination Course Air Officer Candidate School Officer Candidate School
Supervisory Orientation	Drug and Alcohol Management Seminar OEC Supervisor Workshop COMSUBLANT Supervisor Course

2. Review Criteria

One objective of the study was to access the accuracy, consistency, timeliness, and commonality of objectives. The operational definitions of these concepts are:

a. Accuracy

1. Facts and information about drugs and alcohol are consistent with accepted current policy and procedures as established by OPNAVINST 5350.4.
2. Policy statements and procedures are based upon current directives.

b. Consistency

1. Policy statements and procedures agree across courses and documents.

c. Timeliness

1. Policy statements and procedures support current Navy policy.

d. Commonality

1. Policy statements dealing with the same subject agree across courses.
2. The degree of overlap among courses is minimal.

Each of the 14 courses was analyzed and the results summarized by the curriculum development specialists at the Naval Training Systems Center who applied these criteria during the curriculum analysis phase of their study.

3. Interviews

In addition to the curriculum objectives review, several key personnel were interviewed to gain additional perspectives and opinions regarding the existing courses and

evaluation criteria. Individuals were selected for their knowledge of one or more of the courses reviewed and their accessibility by the study team.

4. Cost Analysis

An additional objective of their study was to assess the cost associated with each program studied. Direct expenses were mainly personnel costs with "student" salaries forming the largest part of the total. Travel and per diem expenses were included, but facilities, supplies, and equipment were assumed to be a minimal expense. Overhead expenses were not included. The resulting costs for each program were mainly instructor and student salaries. (The cost data were gathered by telephone calls to course points of contact.) Cost was calculated on an annual basis. The following assumptions were used:

Travel costs	$400/person
Per Diem	$35/day BEQ/BOQ
Personnel	$50,000/year per Navy Billet Cost Model
Training Days	250/year

E. COST BENEFIT STUDY OF THE NAVY'S LEVEL III ALCOHOL REHABILITATION PROGRAM

PHASE THREE: AVOIDED ECONOMIC COSTS OF ALCOHOLISM[11]

A cost benefit analysis of the Navy's Level III alcohol rehabilitation program was conducted by Caliber Associates for the Navy's Drug and Alcohol Abuse Prevention and Control Division (BUPERS-63). The following section will describe the methodology used during the study.

1. Methodology

The basis for the Level III program economic cost analysis was the assumption that alcohol abusers exhibit a higher than average incidence of certain behaviors which incur economic costs. To quantify this assumption, behavioral data were analyzed for a sample of Level III participants and compared with behavioral data for a comparison group. The comparison group was a random sample of Navy members drawn from the general Navy population and considered, for the purposes of the study, to be the Navy average.

To identify the economic costs associated with alcoholism, the pre-treatment behavioral measures for the Level III participants were compared to the behavioral measures for the comparison group. The costs associated with

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[11]Caliber Associates under Contract N00600-87-D-1506, *Cost Benefit Study of the Navy's Level III Alcohol Rehabilitation Program*, by Patricia Devine and others, 15 February 1991.

these measures were used as the estimates of the economic costs of alcohol dependency. Using the same treatment and comparison groups, behavioral measures were analyzed for a three-year period following treatment. The pre- and post-treatment differences between the treatment and comparison groups were used to measure the avoided economic costs resulting from the Level III program.

Most of these economic costs were associated with lost productivity; other costs included medical care, accidents and the involvement of the criminal justice system. Based on the literature, four categories of behavioral measures associated with alcohol abuse were considered: medical care, productivity loss, jurisprudence, and accidents. These measures were adapted to the Navy environment, including:

- Medical care: hospitalization, out-patient clinic visits, family member medical treatment
- Productivity loss: unauthorized absences (UAs), days hospitalization, desertions, sick-days, decreased performance capacity, other productivity losses
- Jurisprudence: courts martial, non-judicial punishments, Captain's Masts, Article 15s, administrative discharges, MP/civilian police encounters including DUIs/DWIs, family violence, property damage
- Accidents: property damage, fatalities, bodily injuries.[12]

[12]Caliber Associates under Contract N00600-87-D-1506, *Cost Benefit Study of the Navy's Level III Alcohol Rehabilitation Program*, by Patricia Devine and others, 15 February 1991.

Data were available from Naval databases for approximately 30 percent of these behavioral measures including: (1) medical care - hospitalizations; (2) production loss: Uas and days hospitalized; (3) jurisprudence: court martials and certain NJPs; and (4) accidents: hospital admissions due to accidents. Data were not available for approximately 70 percent of the measures either because data were inaccessible or because the Navy does not document certain behavioral events.

The data obtained from the Navy databases provide a wealth of information from which the overall effects of the Level III program could be scientifically examined. The data were insufficient, however, to support a cost benefit analysis since approximately 70 percent of the avoided costs of alcoholism could not be estimated.

III. DATA PRESENTATION/ANALYSIS

A. TARGET POPULATION

This section will attempt to identify the population that is most likely to test positive on a urinalysis. The data presented here were selected from *Highlights 1992 Worldwide Survey of Substance Abuse and Health Behaviors Among Military Personnel*. (The methodology for this survey was described in the previous chapter.)

1. Unadjusted Data

In general, illicit drug use among members of the military declined dramatically between 1980 and 1992, showing an 85 percent decrease in drug use over a 12 year period. Marijuana remained the drug most commonly used by military personnel; use of other drugs was much lower. Figures 1-4 compare the drugs used most frequently during the past 12 months across the four services. Table 2 compares more explicitly drug use during the past 30 days and the past 12 months as reported in 1992 by members of the four services.

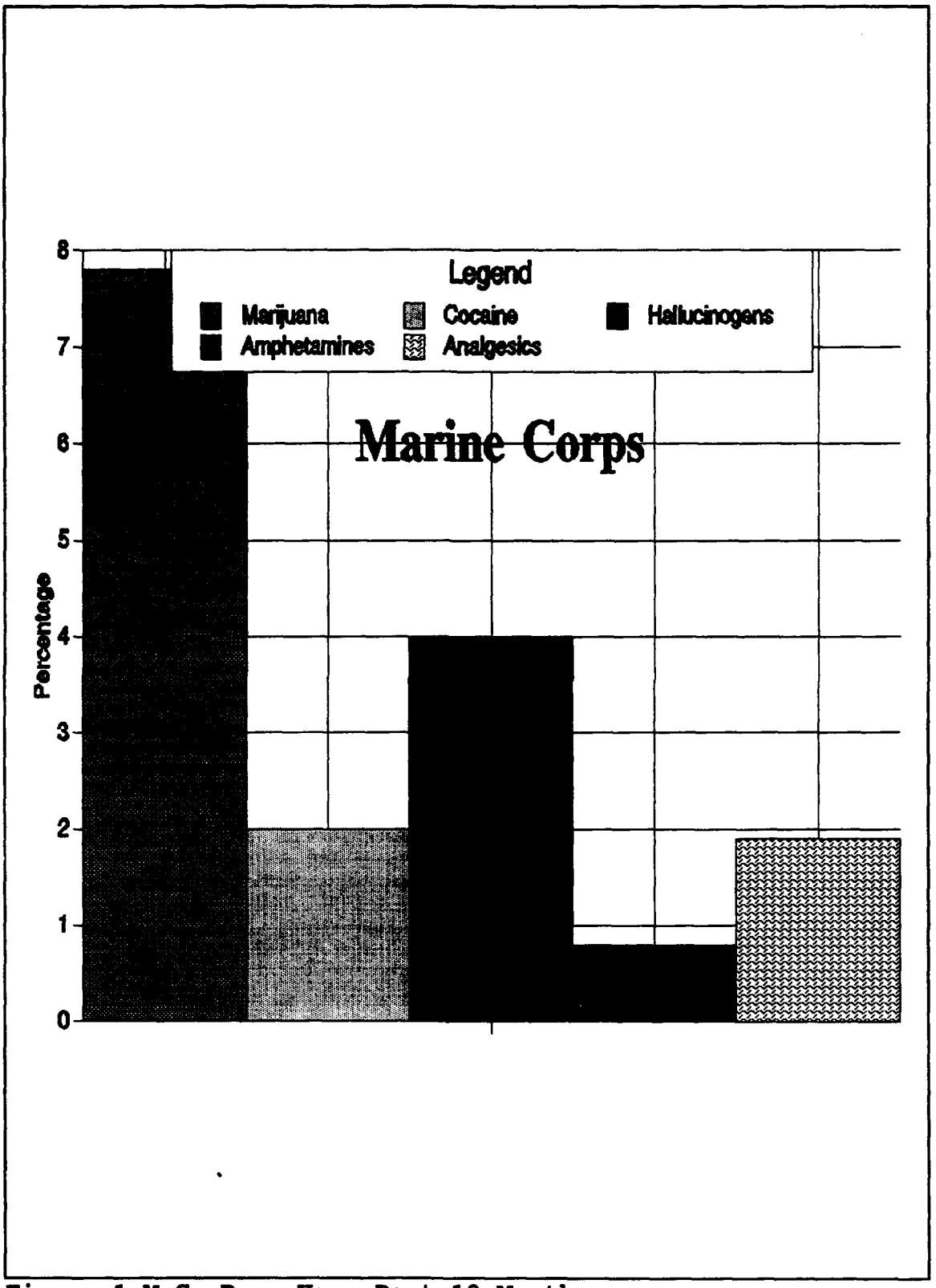

Figure 1 M.C. Drug Use, Past 12 Months

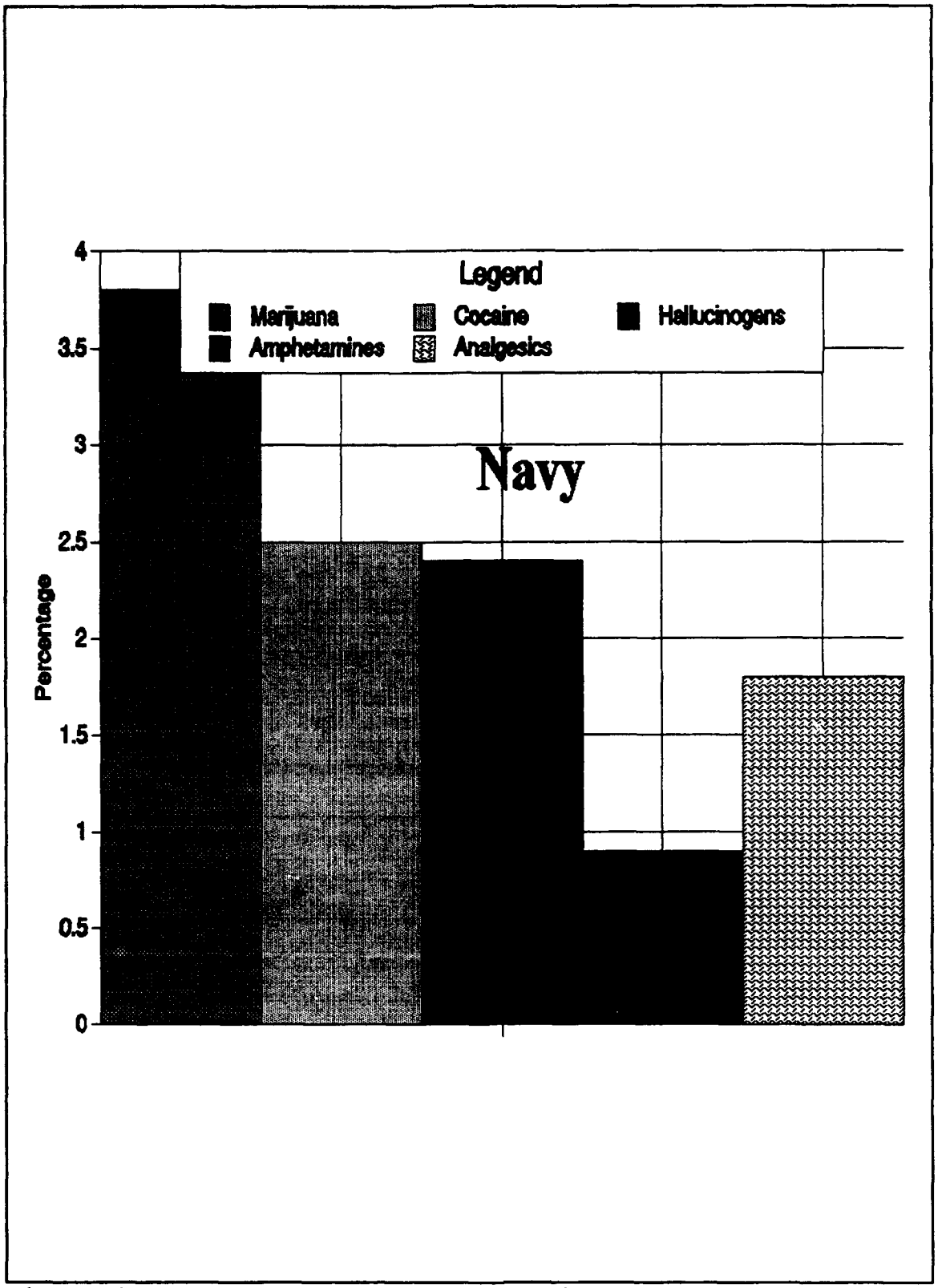

Figure 2 Navy Drug Use, Past 12 Months

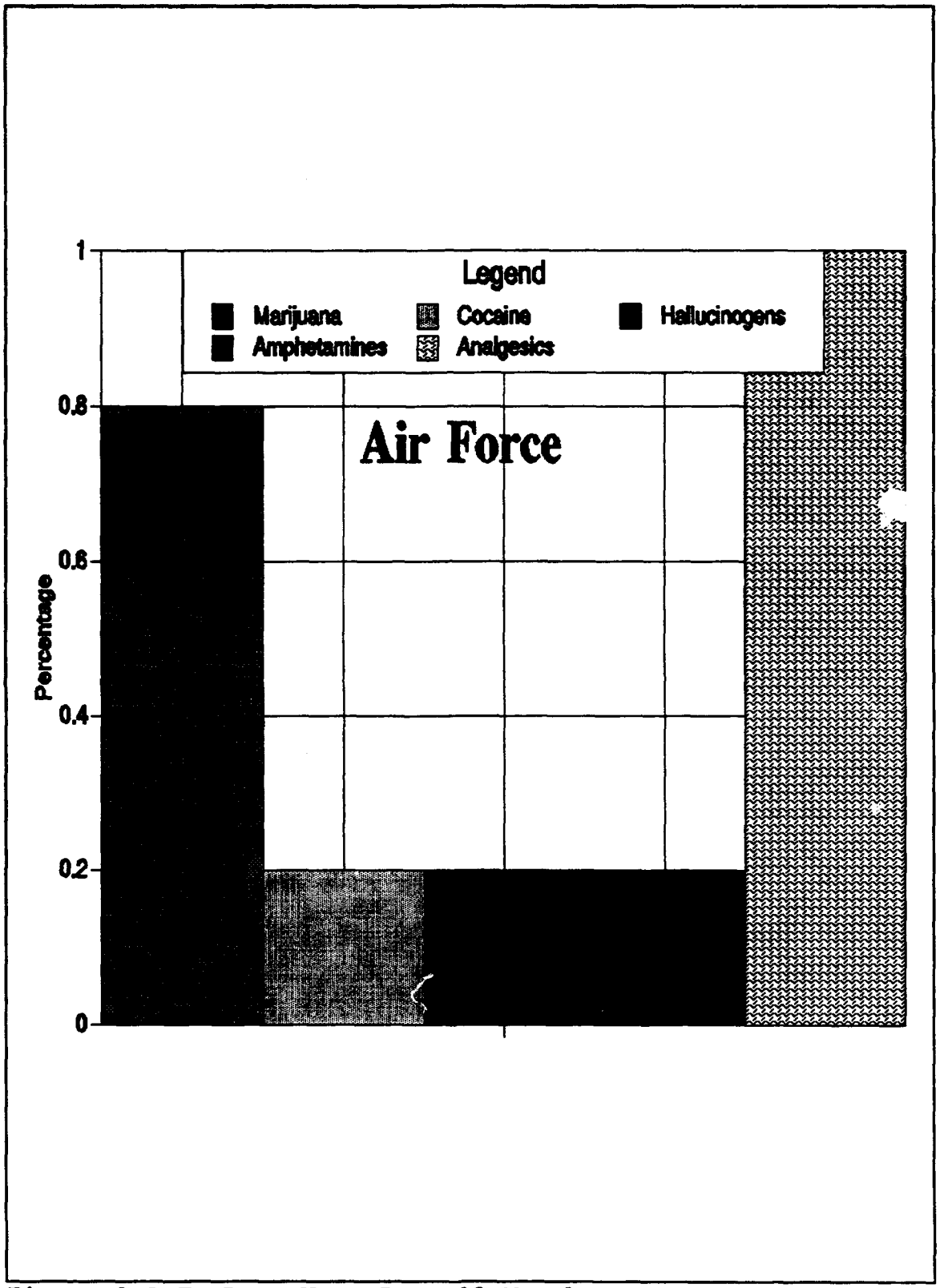

Figure 3 A.F. Drug Use, Past 12 Months

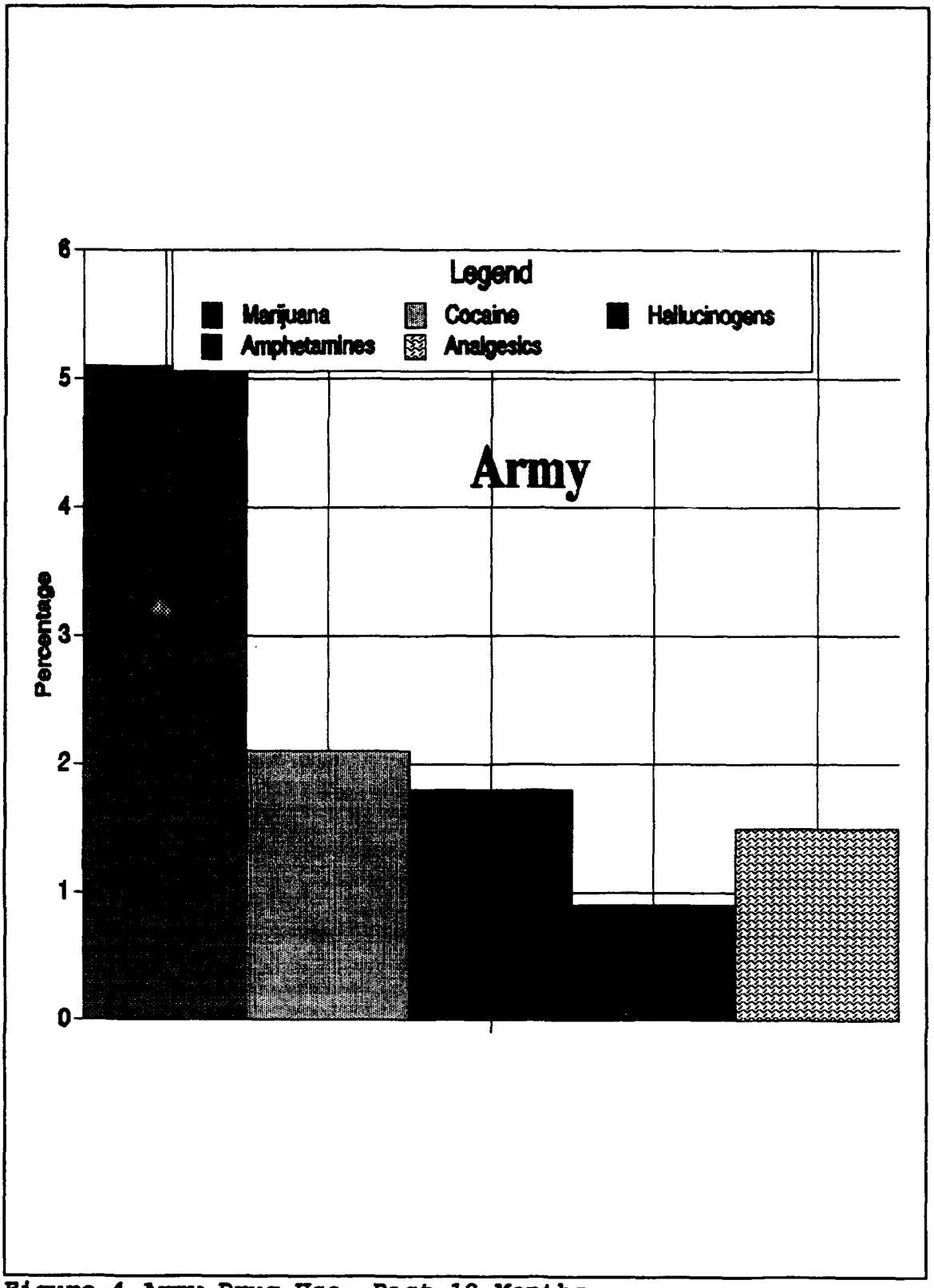

Figure 4 Army Drug Use, Past 12 Months

TABLE 2 1992 ILLICIT DRUG USE, PAST 30 DAYS AND PAST 12 MONTHS

	Service				
Drug & Period of Use	**Army**	**Navy**	**Marine Corps**	**Air Force**	**Total DoD**
Marijuana					
Past 30 Days	1.8	1.8	3.0	0.3	1.5
Past 12 Months	5.1	3.8	7.8	0.8	3.8
Cocaine					
Past 30 Days	0.8	1.1	0.6	0.1	0.7
Past 12 Months	2.1	2.5	2.0	0.2	1.7
PCP					
Past 30 Days	**	0.1	**	0.1	**
Past 12 Months	0.2	0.4	0.5	0.1	0.3
LSD/Hallucinogens					
Past 30 Days	0.8	1.3	2.2	0.1	0.9
Past 12 Months	1.8	2.4	4.0	0.2	1.8
Amphetamines/Stimulants					
Past 30 Days	0.4	0.2	0.5	0.2	0.3
Past 12 Months	0.9	0.9	0.8	0.2	0.7
Tranquilizers					
Past 30 Days	0.4	0.2	0.4	0.2	0.3
Past 12 Months	0.9	0.4	0.8	0.3	0.6
Barbiturates/Sedatives					
Past 30 Days	0.2	0.2	**	0.1	0.1
Past 12 Months	0.5	0.3	0.3	0.1	0.3
Heroin/Other Opiates					
Past 30 Days	**	0.1	**	0.1	**
Past 12 Months	0.1	0.1	0.8	0.1	0.2
Analgesics					
Past 30 Days	1.0	1.3	1.5	0.7	1.1
Past 12 Months	1.5	1.8	1.9	1.0	1.5
Inhalants					
Past 30 Days	0.7	0.7	0.3	0.2	0.5

Past 12 Months	0.8	0.9	0.5	0.2	0.6
"Designer Drugs"					
Past 30 Days	0.2	0.5	0.5	0.1	0.3
Past 12 Months	0.6	0.6	0.8	0.1	0.5
Any Drug[a]					
Past 30 Days	3.9	4.0	5.6	1.2	3.4
Past 12 Months	7.7	6.6	10.7	2.3	6.2
Any Drug Except Marijuana[b]					
Past 30 Days	3.1	3.1	3.9	1.0	2.6
Past 12 Months	5.4	5.5	6.9	1.7	4.5
Anabolic Steroids					
Past 30 Days	0.1	0.1	0.6	0.2	0.2
Past 12 Months	0.5	0.1	0.9	0.2	0.3

Note: Table values are percentages and represent estimates with standard errors excluded. Estimates have not been adjusted for socio-demographic differences among the Services.

[a]Nonmedical use one or more times of any of the above classes of drugs (steroids excluded).
[b]Nonmedical use one or more times of any of the above classes of drugs, excluding marijuana (steroids excluded).

Source: Worldwide Survey of Substance Abuse and Health Behaviors Among Military Personnel, 1992.

2. Adjusted data

The data presented to this point are reported prevalence of drug use for each of the Services (i.e., "unadjusted" estimates with no standard errors). These estimates have not been adjusted to consider differences in the Service socio-demographic composition. These unadjusted estimates are descriptive only and yield no explanatory information about the differences among the Services. In particular, observed differences in these "raw" estimates may be partially explained by differences in the socio-demographic composition of the Services. For example, one might expect a higher rate of drug use in the Marine Corps simply because this service has higher percentages of personnel in higher use categories, i.e., enlisted personnel who are male, younger, less educated, and unmarried. Conversely, one might expect a lower rate of drug use in the Air Force because personnel in this service are more likely to be older, better educated, and married. Figure 5 presents estimates of drug use for each of the Services, adjusted to account for socio-demographic differences between the Services. Regression-based methods were used to standardize the demographic distributions of each of the Services for sex, age, education, race/ethnicity, and marital status.

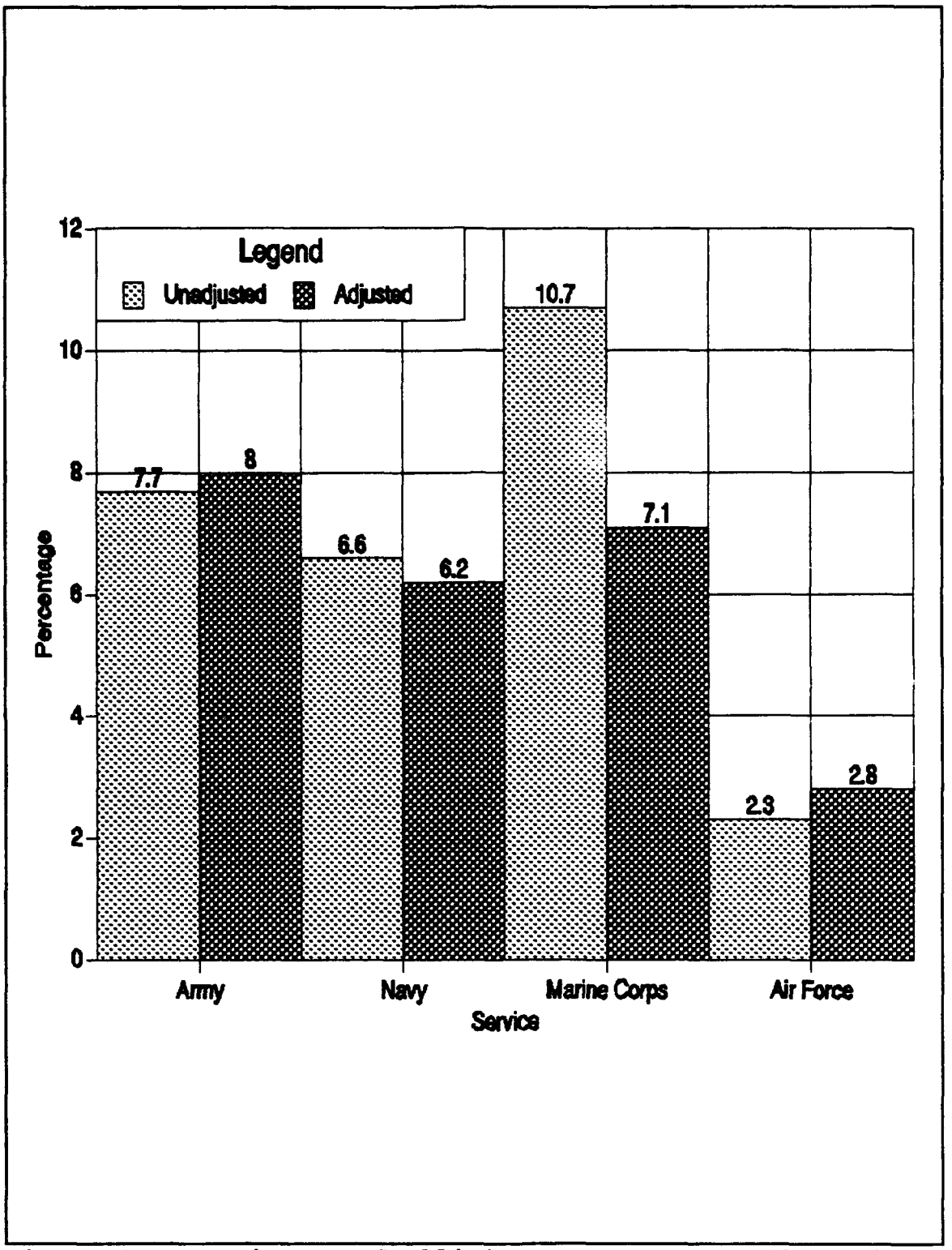

Figure 5 Estimates of Illicit Drug Use, Past 12 Months, Unadjusted and Adjusted for Socio-Demographic Differences

3. Socio-demographics

This section will examine some of the socio-demographics of those military personnel using drugs. The use of any drug during the past 30 days and past 12 months was highest among the lower enlisted pay grades and declined across upper enlisted pay grades and officers. For the past 30 days, 9.2 percent of E1s to E3s and 2.7 percent of E4s to E6s reported drug use, compared to about one percent or lower of personnel in other pay grades (see Figure 6). There was a significant difference in drug use in the lower pay grades

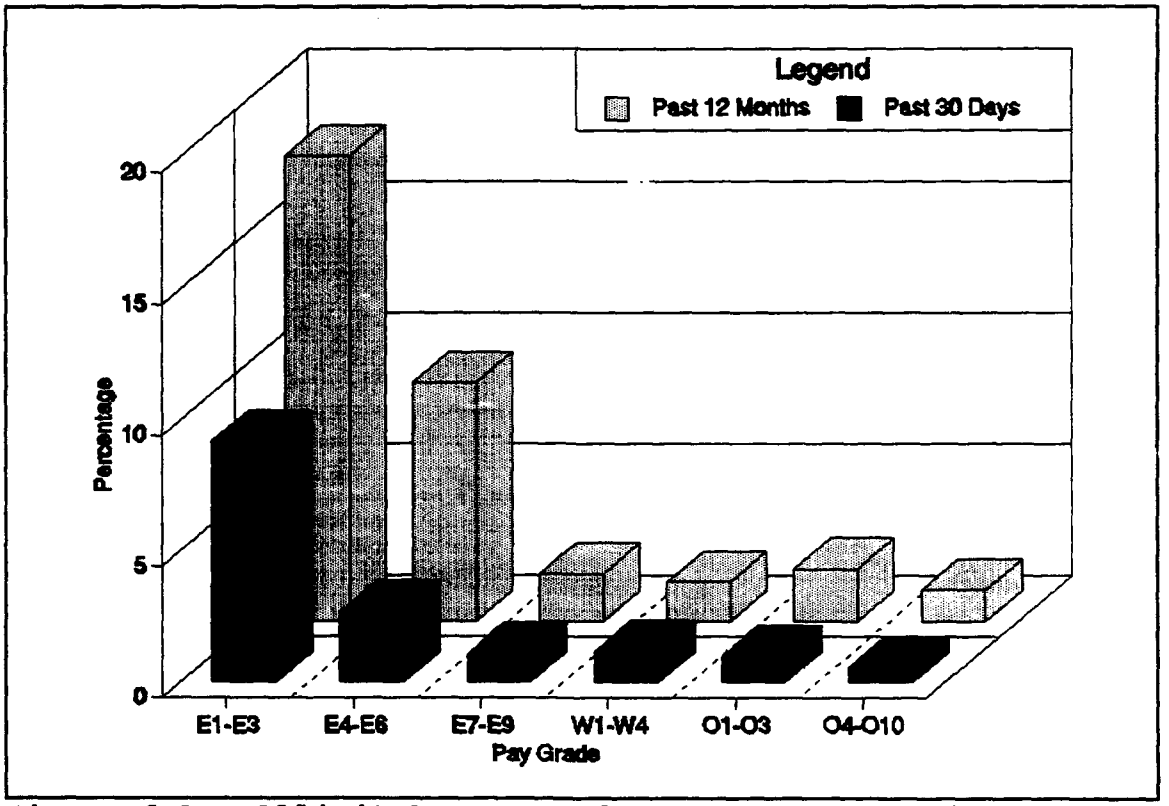

Figure 6 Any Illicit Drug Use, by Pay Grade, Total DoD

between the Air Force and the other Services. Only 1.8 percent of Air Force E1 to E3 personnel have used drugs in the past month compared to over ten percent for each of the other Services; Figure 7 illustrates this point.

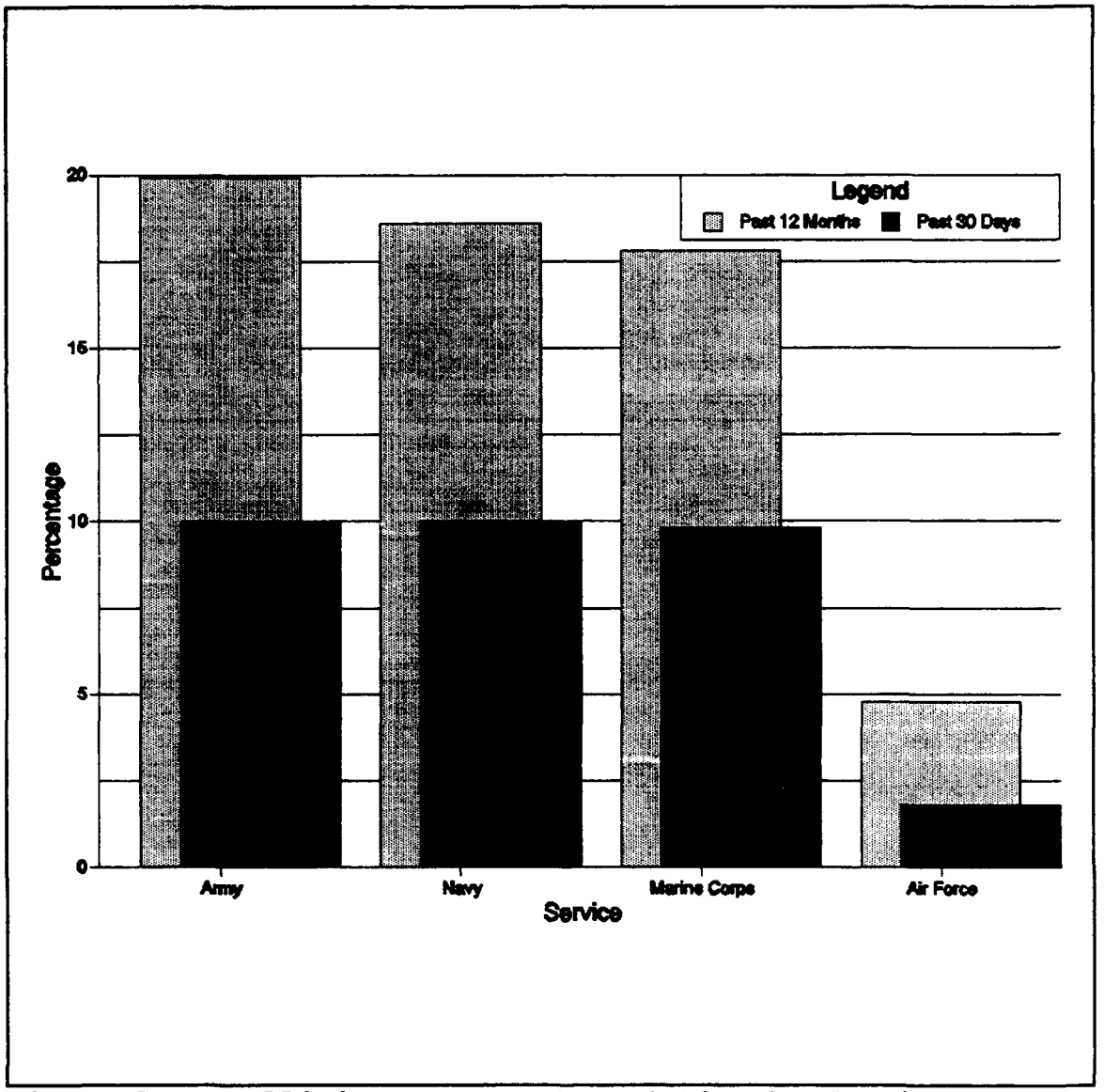

Figure 7 Any Illicit Drug Use for E1-E3s, by Service

Illicit drug use was related to a number of socio-demographic, psychological, and behavioral factors as shown in Table 3.

TABLE 3 ANY DRUG USE (Excluding Steroids), PAST 12 MONTHS, BY SOCIO-DEMOGRAPHIC CHARACTERISTICS

Characteristics	Service				
	Army	Navy	Marine Corps	Air Force	Total DoD
Sex					
Male	8.1	7.6	10.9	2.5	6.7
Female	5.6	3.0	+	1.5	3.4
Race/Ethnicity					
White, non-Hispanic	8.2	7.6	12.9	2.0	6.6
Black, non-Hispanic	6.2	1.7	6.1	2.5	4.2
Hispanic	8.6	12.7	+	5.9	8.9
Other	9.0	3.6	**	1.0	4.4
Education					
Less than high school graduate	+	+	+	+	+
High school graduate or GED	10.6	8.5	12.5	3.5	9.0
Some college	7.3	6.3	9.9	2.5	5.58
College graduate or higher	2.8	2.3	0.9	1.0	1.9
Age					
20 and under	13.1	16.0	15.8	3.3	12.9
21-25	12.2	10.3	17.6	3.6	10.3
26-34	6.2	3.7	2.7	2.1	3.8
35 and older	2.8	1.5	1.8	1.4	1.9
Family Status					
Not married	11.7	10.6	14.3	3.9	9.9
Married, spouse not present	8.0	6.4	+	3.1	7.1
Married, spouse present	5.4	3.2	6.2	1.5	3.6
Pay Grade					
E1-E3	19.5	17.8	17.8	4.3	15.5
E4-E6	7.7	4.7	8.3	2.7	5.3
E7-E9	2.7	1.5	1.2	1.4	1.9
W1-W4	1.1	1.1	2.6	*	1.2
O1-O3	1.9	1.7	**	0.6	1.2
O4-O10	2.6	0.4	2.3	0.4	1.3

Region					
Americas	7.9	7.1	11.8	2.4	6.5
North Pacific	5.4	2.7	8.5	2.1	5.0
Other Pacific	12.0	4.2	4.4	1.7	6.0
Europe	7.0	3.1	3.9	1.9	4.9
Total	7.7	6.6	10.7	2.3	6.2

Note: Table values are percentages reporting drug use in the past 12 months, excluding steroids.

* There are no warrant officers in the Air Force.
** Estimate rounds to zero.
+ Unreliable estimate.

Source: Worldwide Survey of Substance Abuse and Health Behaviors Among Military Personnel, 1992.

Some of the analysts' findings are summarized below.

- Drug use among some groups varied by a factor of two or more. Males were nearly twice as likely to be users compared to females (6.7% versus 3.4%). Hispanics had the highest use in the past year (8.9%), while Blacks (4.2%) and those categorized as "other" (4.4%) had lower rates.

- Use varied across educational levels; past-year use among those with high school education (9.0%) was higher than among those who attended some college (5.5%) or were college graduates (1.9%).

- Those married with spouse present were much less likely to use drugs (3.6%) than those who were single (9.9%) or married with spouse not present (7.1%).

- After having controlled for the effects of other variables using regression analysis, the analysts found that illicit drug use among enlisted males was strongly predicted by their inclination to use drugs in the absence of urinalysis testing, approval or disapproval of drug use by others in their social network, and attitudes about marijuana use. The following were also significant predictors of drug use among enlisted males: perceived stress at work, Service (i.e., drug use is more likely in the Army and the Navy than in the Air Force), family status (i.e., more likely among single and married but unaccompanied personnel than married and accompanied personnel), region (i.e., more likely in the Americas), and pay grade (i.e., more likely among E1-E3s).

- For enlisted personnel, rates of use were also highest for direct combat occupations (10.9%) and health care workers (10.5%). The rates were lowest for electronic equipment repair personnel (4.3%).

a. Air Force Substance Abuse Program vs Navy Substance Abuse Program

After standardizing for socio-demcgraphics, the Air Force's rates of self-reported substance use remained much lower than the Navy's (1.2% vs 4.0% reported use in the past 30 days). The percentages of personnel actually discharged from the Air Force and the Navy for substance abuse are equally disparate. (Table 4 displays these data.)

TABLE 4 AIR FORCE VS NAVY SUBSTANCE ABUSE SEPARATIONS

	AIR FORCE	NAVY
SERVICE ENDSTRENGTH	466,059	536,800
TOTAL DISCHARGES	322	2,989
PERCENTAGE	**.0691%**	**.5568%**

Source: Enlisted Master Files of the Defense Manpower Data Center's Separation Desk

The percentages observed in Table 4 could be attributable to several factors including testing methods, education, and levels of attention. (See Table 5.)

TABLE 5 AIR FORCE SUBSTANCE PROGRAM VS NAVY SUBSTANCE ABUSE PROGRAM

ACTIVITY	NAVY	AIR FORCE
TESTING	20% OF A COMMAND'S PERSONNEL OR 200 SAMPLES/MONTH FOR SIX DRUGS	100% FOR MARIJUANA AND COCAINE
EDUCATION	VOLUNTARY (DEPENDING ON AVAILABILITY) OR MANDATORY AFTER SUBSTANCE ABUSE INCIDENT	MANDATORY @ INDOCTRINATION AND AFTER SUBSTANCE ABUSE INCIDENT
LEVELS OF ATTENTION	LEVEL 1 EDUCATION (PREVENT) LEVEL 2 SCREENING (CAAC) LEVEL 3 RESIDENTIAL REHABILITATION (ARC)	SUBSTANCE ABUSE REORIENTATION AND TREATMENT (SART) TRACK 1 RETURN TO DUTY TRACK 2 AWARENESS EDUCATION TRACK 3 REORIENTATION TRACK 4 TREATMENT TRACK 5 TRANSITIONAL COUNSELING

B. COST OF REHABILITATION

This section will examine the costs to the military associated with rehabilitating a substance abuser. The data presented here are taken from the *Cost Benefit Study of the Navy's Level III Alcohol Rehabilitation Program Phase Three: Avoided Economic Costs of Alcoholism* conducted by Caliber Associates in 1991.

1. Level III Program Successes

A successful rehabilitation was defined as a Level III participant who (1) completed the program, (2) was recommended for reenlistment, and (3) experienced no further substance abuse incidents in that period. Of the 7,192 individuals who entered treatment, 6,024 (84%) completed the program, 3,739 (52%) completed their term of enlistment and were recommended for reenlistment and 3,305 (46%) had no further substance abuse incidents reported. When viewed as percentages of program completers, success rates were higher. Approximately two-thirds (62%) of those completing the program were recommended for reenlistment and over one-half (55%) were recommended for reenlistment and had no further substance abuse incidents. (Table 6, on the following page, presents this data.)

TABLE 6 LEVEL III PROGRAM SUCCESSES

	Number of Persons	Percent of Program Completions (N=6,024)	Percent of Treatment Cohort (N=7,192)
Completed Program	6,024	100%	84%
And Recommended for Reenlistment	3,739	62%	52%
And No Further Substance Abuse Incidents	3,305	55%	46%

2. Level III Program Outcomes

The specific behavioral measures used for the outcome analysis included: (1) medical care - hospitalizations; (2) productivity loss - Uas and days hospitalized (sick days due to hospitalization); (3) jurisprudence - courts martial and certain NJPs, and (4) accidents - hospital admissions due to accidents. Of the total treatment sample, all Level III participants who completed the Level III program were included in the outcome analysis: outcome data were assessed in the following four groups:

- Program completers who were recommended for reenlistment and **had no further alcohol/drug incidents**
- Program completers who were recommended for reenlistment but **had further alcohol/drug incidents**
- Program completers who were **not recommended for reenlistment**
- Comparison group, drawn from the general Navy population, who represented **the Navy average**.

For each behavioral measure, an annual per capita rate was calculated and comparisons were made between pre- and post-treatment and between treatment and comparison groups. A summary of these calculations is presented in Table 7.

TABLE 7 SUMMARY OF LEVEL III OUTCOME DATA BY GROUP

	MEDICAL EVENTS Hospitalizations		PRODUCTIVITY LOSS Uas		Sick Days		JURISPRUDENCE NJPs		ACCIDENTS Hospital Days	
GROUP WHO COMPLETED TREATMENT	Rate Pre	Rate Post	Rate Pre	Rate Post	Rate Pre	Rate Post	Rate Pre	Rate Post	Rate Pre	Rate Post
No further alcohol incidents	.49	.26	.19	.11	1.84	1.56	.21	.14	.39	.32
Further alcohol incidents	.60	1.84	.19	.20	2.70	35.04	.17	.15	.49	1.29
Not recommended for reenlistment	.49	.42	.47	.53	1.80	4.29	.44	.67	.45	.41
Comparison Group	.36	.36	.24	.24	2.43	2.43	.26	.26	.55	.55

a. No Further Substance Abuse Incidents

The group who completed the treatment, were recommended for reenlistment and had no further substance abuse incidents were by definition the most successful Level III clients. Their outcome data supported this definition. With respect to hospital admission rates, the pre-treatment rate was significantly higher than the comparison group and the post-treatment rate was significantly lower. A related measure, hospital days due to accidents, showed similar results. Although the pre- and post-treatment rates were already lower than the comparison group, the reduction (.39 to .32) following treatment was the significant factor.

The two productivity measures (Uas and sick days) and the one jurisprudence measure (NJPs resulting in demotions) for the most successful Level III clients show this group performed better than the comparison group prior to treatment. Their post-treatment rates were significantly better than their pre-treatment rates which suggests this group were (a) naturally high performers and/or (b) rehabilitated by their Level III treatment and then improved their performance records.

b. Further Substance Abuse Incidents

The second group, those who completed treatment, were recommended for reenlistment and had further substance abuse incidents, was valued by the Navy and therefore retained. However, by definition this group was not rehabilitated by the Level III treatment program because they had post-treatment substance abuse incidents. The data also suggest this group was not rehabilitated.

On measures pertaining to health (hospital admission rates, sick days, and hospital days due to accidents), this group was significantly worse than the comparison group prior to treatment. Following treatment, the rates for this group in each category rose sharply; the post-treatment sick day rate was over ten times the pre-treatment rate.

On measures pertaining to behavior (Uas, NJPs resulting in demotions) this group had lower rates, prior to treatment, than the comparison group. Following treatment, there was no change in the UA and NJP rate for this group. These data suggest that some of the Level III treatment completers, although alcohol abusers, presented no further disciplinary problems either before or after treatment. The Navy viewed these individuals as good sailors and recommended them for reenlistment despite their alcohol abuse.

c. Not Recommended For Reenlistment

The third group, program completers who were not recommended for reenlistment, was judged by the Navy as being un-rehabilitated. The data for this group show a pattern that is opposite to the program completers with further alcohol incidents. The behavior measures (Uas and NJPs) for this group show a poor performance pre-treatment that worsened after treatment. The NJP post-treatment rate was three times the rate for the comparison group. On health-related measures, this group was relatively stable following treatment although their sick day rate more than doubled.

d. Data Summary

In summary, the outcome data support the definition of successful program completion used in the study. Program completers who were recommended for reenlistment with no further substance abuse incidents showed significant post-

treatment improvements, across the board. It is also clear that the group who appeared to be successfully treated but who had further substance abuse incidents were still very ill with substance abuse-related diseases. What is not clear is whether the group who were not recommended for reenlistment were poor performers because of or independent of substance dependence.

3. Costs of the Level III Rehabilitation Program

The Caliber study obtained cost data from each of the four Alcohol Rehabilitation Centers and Navy Medical Command (NAVMEDCOM) for the ARDs for Fiscal Year (FY) 1987. The total cost of Level III treatment, including direct program costs, staff training and the opportunity costs of rent, was **$31.7 million in FY 1987.** (ARCs accounted for approximately $8.8 million while the ARDs accounted for $22.9 million.) These costs were averaged across the 7,359 patients served in FY 1987 and deflated to 1983 dollars so as to make the dollars comparable to the 1982-1983 patient treatment data. These fixed program costs per patient in 1983 dollars were then added to the average patient salary and estimated transportation costs in 1983 dollars to obtain the total costs per patient. **Total average cost per patient in 1983 dollars was $5,029.** A complete summary of the cost data is presented in Table 8.

TABLE 8 LEVEL III TOTAL PROGRAM, VARIABLE COSTS AND PER PATIENT COSTS (1983 DOLLARS)

Facility Type	Total Program Costs (FY87)	Total Program Costs (1983)	Program Costs/ Patient	Patient Salary + Trans	Total Cost/ Patient (1983)
ARCs	$8,805,125	$7,681,639	$2,523	$1,406	$3,929
ARDs	$22,880,986	$20,100,662	$4,659	$1,148	$5,807
Total	$31,686,111	$27,782,301	$3,775	$1,254	$5,029

It should be noted that ARD program costs are inflated by the costs associated with detoxification patients and other services that are not part of the Level III rehabilitation program. Because the cost of these services is not known, ARD costs have not been adjusted. The costs of alcohol rehabilitation in a medical facility can be expected to be higher than the cost of rehabilitation in a non-medical facility.

It should also be noted that ARD and ARC costs compare favorably with the cost of similar treatment programs in the civilian sector. A 1987 survey of inpatient rehabilitation programs conducted by the National Association of Addiction Treatment Providers reported an average cost of $7,805 for a 28 day program. For comparison purposes, the average 1987 Navy cost, not including opportunity costs of rent, patient salaries or transportation was $4,109 for a 40-45 day program.

C. COSTS OF SEPARATION

This section will examine the costs to the military associated with replacing (separating) a substance abuser. The data presented here are taken from the *Cost Benefit Study of the Navy's Level III Alcohol Rehabilitation Program Phase Two: Rehabilitation VS Replacement Costs* conducted by Caliber Associates in 1989. This report represents the current established procedure for estimating the value of rehabilitation or drug education. However, a recent thesis by Katherine Erb develops a new methodology. This methodology indicates that the Caliber associates study may overestimate replacement costs by as much as a factor of ten.

1. Level III Program Benefits -- Avoided Replacement Costs

Avoided replacement costs were calculated as program benefits for a sample treatment cohort of enlisted personnel who were Level III program participants during a specified time period. The treatment cohort was obtained from a Naval Health Research Center (NHRC) database of program participants for 1982-84. The database included Navy Alcohol and Drug Information System (NADIS) records up to 1986 as well as data from the Enlisted Master File (EMF) and Naval health and hospitalization records up to 1988.

2. Replacement Costs

The costs of replacing Naval personnel at any point in their career are significant; the costs of replacing highly

trained and/or experienced career personnel can be extremely large. Caliber Associates defined replacement costs, for the purposes of their study, to include the costs for recruitment, accession processing and recruit and subsequent skills training.

The Navy's Selected Reenlistment Bonus (SRB) Program is based on a replacement cost model that accounts for the major Naval expenditures associated with replacing personnel at given skills and experience levels. The Caliber study utilized the SRB program model to develop cost estimates for the successful Level III program participants.

a. Selected Bonus Reenlistment Program Model

The SRB program offers bonuses to Naval personnel to encourage reenlistment under the accepted belief that it is less expensive for the Navy to maintain end strength by increasing retention than to recruit a sufficient number of replacements and invest in equivalent skill training. The SRB model bases bonus payments on recruitment, training costs and length of service. Specific factors included in the SRB model include:

- Recruitment costs
- Recruit training costs
- Pay and allowance while in recruit training
- "A" School costs
- Pay and allowance while in "A" School
- Instructor costs.

The SRB model contains three elements: (1) the rate code designating the skill and training necessary to achieve that skill; (2) the number of accessions necessary to replace the

skill level at three Length of Service (LOS) intervals (LOS 2-6, LOS 7-10, and LOS 11-14); and (3) the training/replacement cost for each accession. Table 9 provides examples of the three elements.

TABLE 9 EXAMPLES OF MAJOR ELEMENTS FROM THE SRB MODEL

RATE	ACCESSIONS TO REPLACE			TRAINING/REPLACEMENT COST PER RECRUIT (FY 82 DOLLARS)
	LOS 2-6	LOS 7-10	LOS 11-14	
SH	7.53	10.56	12.68	$5,836
PM	8.15	19.56	19.56	$22,953
GSM	1.61	2.25	2.68	$37,616

The rate SH is a ship serviceman. To replace a sailor whose rate is SH and who has had between two and six years of service, it would take 7.53 recruits at a training/replacement cost of $5,836 per recruit. Therefore, it would cost the Navy $43,945 (FY82 dollars) to replace a six-year ship serviceman. Similarly, it would cost $100,811 (2.68 x $37,616) to replace a gas turbine systems mechanic (GSM) who had 14 years in service. There are 96 rate codes in the SRB model; replacement costs range from $27,784 for a Data Systems Technician (DS) with two years service to over $930,662 for an Instrumentman (IM) with 14 years of service.

Although the SRB program replacement cost data are not exact, they are reported to be the best estimates of replacement costs for the various rating groups. The Navy

considers these estimates as good representatives of actual replacement costs; the SRB program data are used by the Navy in such official forums as Congressional hearings.

b. Application of SRB Model to Level III Treatment Successes

The SRB model was applied to the Level III treatment successes. All ratings contained in the sample were matched to the ratings in the SRB model. The length of service of each program success was matched with the three SRB categories: LOS 2-6, LOS 7-10, LOS 11-14. The number of accessions needed to replace a specific rating within the length of service category was then identified. This factor was multiplied by the monetary value of the base training/replacement cost.

Over 86 of the 96 SRB rating codes were represented among the treatment sample. The replacement value of the sample ranged from $28,895 for a data systems technician (DS) with two years of service to $967,888 for an instrumentman (IM) with 11 years of service.

Rate codes were available for only 1930 individuals of the 3863 program successes. An average per person replacement value was calculated for those individuals for whom rate codes were available. This average was then applied to the entire ARC and ARD success cohort. Table 10, on the following page, presents these values.

TABLE 10 AVERAGE PER PERSON AND TOTAL REPLACEMENT cost ESTIMATES FOR LEVEL III TREATMENT COHORT

FACILITY TYPE	# with Rate Codes	Average per Person Replacement Values	Total Successes	Total Replacement Cost Savings
ARC	1326	$123,289	1664	$205,152,896
ARD	1604	$122,449	2199	$269,265,351
TOTAL	**2930**	**$122,829**	**3863**	**$474,488,427**

The average per person replacement costs ranged from $123,289 for the ARCs to $122,449 for the ARDs. The overall average per person replacement costs for the total cohort of successfully rehabilitated drug and alcohol abusers was $122,829.

The total replacement cost savings depend on the number of successful program completions. The ARCs had a slightly higher average replacement value. However, the ARCs had a lower number of program successes than the ARDs. Thus the ARC's total cost savings of $205,152,896 was less than the $269,265,351 for the ARDs. **The total cost savings for the total cohort of successfully treated individuals based on the overall average replacement value was $474,488,427.** (Had these individuals not been successfully treated, this would have been the effective separation cost incurred by the government to replace these individuals.)

D. COST OF EDUCATION/PREVENTION

This section will examine the military's cost associated with educating military personnel to prevent substance abuse. A portion of the data presented here are taken from the *Cost Benefit Study of the Navy Alcohol and Drug Safety Action Program* conducted by Caliber Associates in 1992.

1. Personal Responsibility and Values Education and Training

On January 19, 1993, the CNO changed the name of the Navy Alcohol and Drug Safety Action Program (NADSAP) course to reflect its broader role as a prevention/education course. Its new name is Personal Responsibility and Values Education and Training "PREVENT." The PREVENT course is a 36-hour training course provided to Naval personnel worldwide. The PREVENT program is provided to service members who have had an initial alcohol incident and have been referred from an intervention program (Level I treatment). It is also provided for purely preventive purposes to those who have not had an alcohol incident. The course, provided under contract with the University of Arizona, is primarily designed to prevent alcohol abuse and illicit drug use. In addition to alcohol and drug abuse prevention, PREVENT targets several other areas, including:

- Navy values
- Sexual behavior

- Smoking cessation
- Sexually transmitted diseases
- Nutrition
- Physical readiness
- Personal Responsibility
- Suicide prevention

The curriculum emphasizes developing skills for adaptability, decision making/problem solving, resistance to addiction practices, and interpersonal skills.

2. Findings From Commanding Officers

During their cost/benefit analysis, Caliber associates asked commanding officers (COs) a series of questions designed to summarize their knowledge about NADSAP and their attitudes about the value of NADSAP to their command and the Navy.

a. Importance of NADSAP Objectives to Commanding Officers

Commanding officers were asked how much of an E-4's time he/she would be willing to spend to achieve the objectives targeted by the NADSAP program.

If an E-4 has a substance abuse incident, COs would be willing to spend between 35 and 46 hours of duty time to achieve all of NADSAP's objectives. COs would be willing to spend less time, 28-39, hours to achieve the same objectives if the E-4 has not had a prior substance abuse incident.

COs were asked about the time they would allocate to each of NADSAP's program objectives. (see Table 11) For E-4s with a prior incident, COs would spend the least time, 1-2, hours for "increased knowledge of Navy policy on substance abuse." COs would spend the most time, 7-8 hours, for "improved interpersonal skills and stress management." COs would spend 3-4 hours to accomplish each of the remaining objectives.

For E-4s without a prior incident, COs' priorities were different. They would spend the least time, 1-2 hours, for "increased knowledge of Navy policy on substance abuse," "increased awareness of individual's own drinking patterns and reasons for use," "improved health behavior patterns," and "avoidance of substance abuse incidents." They would spend the most amount of time, 5-6 hours, for "increased knowledge of consequences of substance abuse" and "reduced alcohol consumption/responsible drinking behavior." COs would spend 3-4 hours to accomplish the remaining NADSAP objectives with these sailors. (These data are summarized in Table 11.)

TABLE 11 AVERAGE AMOUNT OF AN E-4's TIME COs WOULD BE WILLING TO SPEND TO ACHIEVE OBJECTIVES TARGETED BY THE NADSAP PROGRAM

	An E-4 With A Prior Substance Abuse Incident	An E-4 With No Prior Incident
Increased knowledge of consequences of substance abuse	3-4 hours	5-6 hours
Increased knowledge of Navy policy on substance abuse	1-2	1-2
Increased awareness of individuals own drinking patterns and reasons for use	3-4	1-2
Increased negative attitudes toward excessive drinking/drinking while driving	3-4	3-4
Reduced alcohol consumption/responsible drinking behavior	3-4	5-6
Improved interpersonal skills and stress management	7-8	3-4
Improved health behavior patterns	3-4	1-2
Avoidance of substance abuse incident	3-4	1-2
Improved work performance	3-4	2-3
Increased initiative and responsibility	3-4	3-4
Enhanced sense of pride and professionalism	3-4	3-4
TOTAL	35-46	28-39

b. Commanding Officer's Assessment of the Value of NADSAP

Commanding officers were asked about their familiarity with the NADSAP program, and their assessment of the NADSAP's value to their command and to the Navy.

In general, COs were familiar with NADSAP: 50 percent indicated they were very familiar with the program, while another 44 percent indicated they were somewhat familiar.

On a scale from 1 (not at all valuable) to 5 (very valuable), 61 percent of COs rated NADSAP's value to their command as a "4" (38%) or a "5" (23%). The average rating was 3.7. Using the same scale, 58 percent of COs rated NADSAP's value to the Navy as a whole as a "4" (31%) or a "5" (27%). Again, the average rating was a 3.7.

A majority of COs believed NADSAP was worth 36 duty hours, regardless of whether the member had a previous substance abuse incident. Over 83 percent of COs felt that NADSAP was worth 36 hours for the service members with a substance abuse incident. Slightly fewer COs (60%) indicated NADSAP was worth 36 hours if the service member did not have a prior substance abuse incident. (Table 12 summarizes these data.)

TABLE 12 COMMANDING OFFICER'S ASSESSMENT OF THE VALUE OF NADSAP

Familiarity with NADSAP	
Very Familiarity	50%
Somewhat Familiar	44%
Not That Familiar	6%
Value of NADSAP to Respondent's Command	
1 = Not at all valuable	6%
2	6%
3	27%
4	38%
5 = Very valuable	23%
Value of NADSAP to the Navy As A Whole	
1 = Not at all valuable	2%
2	10%
3	30%
4	31%
5 = Very valuable	27%
Is NADSAP Worth 36 Duty Hours If the Member Has Had A Substance Abuse Incident?	
Yes	83%
No	14%
Uncertain	3%
Is NADSAP Worth 36 Duty Hours If the Member Has Not Had A Substance Abuse Incident	
Yes	60%
No	33%
Uncertain	7%
Is NADSAP Worth $100 of Navy Funds If the Member Has Had a Substance Abuse Incident?	
Yes	89%
No	8%

Uncertain	3%
Is NADSAP Worth $100 of Navy Funds If the Member Has Not Had a Substance Incident?	
Yes	65%
No	30%
Uncertain	6%

c. Education Costs

The following data were collected during interviews with the PREVENT staff. Starting in FY 1975, BUPERS paid 99% of the program costs and the classes were allocated on the basis of claimant demand. In FY 1990, funding cutbacks required claimants to share the program costs. DAPMA requested that each claimant estimate course usage for the fiscal year. BUPERS funded 60% of the requested classes and paid all administrative costs. The remaining classes were funded by the claimant or individual command.

During FY 1992, the total cost per class was $3,140. BUPER's share was $2,147; the claimants' share was $992.90. The total program cost in FY 1992 was **$3.6 million.**[13] Using the *Economic Report of the President,*[14] this number was deflated to

[13]Interview between B. McGowin, LT, USN, Contract Technical Representative for PREVENT course, DAPMA, San Diego, CA, and the author, 20 July 1993.

[14]*Economic Report of the President Transmitted to Congress January 1993*, pg. 353, Government Printing Office, Washington, DC, 1993.

FY 1983 dollars. In FY 1983 dollars, the total program cost was $2.7 million.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

This thesis has considered the primary research question: should the Navy expand its drug abuse education program? Four subsidiary research questions were addressed to answer this question:

1. What are the characteristics of the Navy's drug population?
2. What are the costs/benefits of the Navy's Level III rehabilitation program?
3. What are the costs of separating sailors who use illegal drugs?
4. What are the costs/benefits of the Navy's drug education program?

1. Characteristics of the Navy Drug Population

The target population was defined as service members who are most likely to test positive on a urinalysis. According to the data from the *Highlights 1992 Worldwide Survey of Substance Abuse and Health Behaviors Among Military Personnel*, which are summarized in Table 5, the following are characteristics of service members in the target population:

- male
- hispanic or caucasian
- high school graduate or GED

- under 20 years old or 21 - 25 years old
- not married or married, spouse not present
- E1-E3
- direct combat or health care occupation
- stationed in the Americas or Other Pacific

This is not an all-inclusive list; these are some of the statistically significant characteristics of service members most likely to test positive on a urinalysis. Marijuana remains the drug most likely to be used by the target population.

2. Cost of Separating Sailors Who Use Illegal Drugs

The costs of replacing Naval personnel at any point in their career are significant. For the purposes of this study, replacement costs include: recruitment costs, accession processing, and recruit and subsequent skills training. Applying the Navy's SRB model to the persons who would have been separated from the Navy for illicit drug use, the average per person replacement cost was $122,829. When this average per person replacement cost is related to the number of persons successfully rehabilitated, the Navy's total avoided replacement costs would have been **$474,488,427**[15].

[15]$122,829 (average per person replacement cost) x 3863 (total successes) = **$474,488,427**

3. Cost/Benefits of the Navy's Level III Rehabilitation Program

The Caliber study obtained cost data from each of the four ARCs and NAVMEDCOM for the ARDs for FY 1987 and deflated these cost to a FY 1983 level. The total cost of Level III treatment, including direct program costs, staff training, and the opportunity costs of rent was **$27.8 million, in FY 1983 dollars**. Of the persons successfully completing the program, approximately 55% were recommended for reenlistment and had no further substance abuse incidents.

The Navy's Level III program is overwhelmingly cost-beneficial when one compares the cost of the program to the avoided costs of replacing Naval personnel with a substance abuse problem. The Navy experienced **net savings of $446.7 million** (1983 dollars)[16] for the 7192 patients treated in FY 1982-84.

The costs of replacing trained and highly skilled personnel are so exorbitant that the Level III program benefits would outweigh program costs under almost any circumstances. From the perspective of return on investment, the Navy is justified in continuing financial support for the Level III program, and in expanding available treatment to meet the existing need.

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[16]Avoided replacement costs ($474,488,427) minus the costs of the Level III treatment ($27.8 million).

4. Cost/Benefits of the Navy's Drug Education Program

The PREVENT program is a 36-hour training course provided to Naval personnel worldwide. Though the program is provided to service members who have had an initial alcohol incident and have been referred from an intervention program, it is also provided for purely preventive purposes to those who have not had an alcohol incident. The total program cost in FY 1992 was $3.6 million; after deflating to FY 1983 dollars, the total program cost was **$2.7 million.**

Though the Navy's Level III program is cost-beneficial in comparison to the cost of replacement, when compared to the costs of education, the program becomes less appealing. The total PREVENT program cost of $2.7 million was compared to the total Level III program cost of $27.8 million. The average cost per student of the PREVENT program was **$209.33**[17] compared to the **$3,775** average cost per patient of Level III treatment.

Of course, the true value of an education program depends on the cost-effectiveness of reducing the demand for illegal drugs through education. Unfortunately, the impact of education on drug use is difficult to measure. Within DoD, one indication comes from comparing drug use data for the Navy and the Air Force. Drug use in the Air Force is significantly lower than in the Navy. The Air Force also has a more

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17

$$\frac{\$2{,}147 \textit{ BUPERS actual cost per class} + \$992.90 \textit{ claimant's cost per class}}{15 \textit{ students per class average}} = \$209.33$$

proactive education program. If cause and effect can be established, it would support expanding the Navy's drug education program.

B. RECOMMENDATION

Based on the data presented, it is recommended that the Navy expand its drug education program. The PREVENT program is not only the least expensive alternative, according to the data given by Commanding Officers, it is also valuable/beneficial in preventing substance abuse.

Several alternatives have been presented to control the Navy's substance abuse problem. Of the alternatives presented, education is by far the least-expensive. However, education alone will not eliminate the problem.

The appropriate mix of education, rehabilitation, and separation would balance the marginal benefits per dollar for the last dollar spent on each alternative. If the Navy spent an additional dollar on education or rehabilitation, how much will that reduce drug use or increase readiness?

C. Areas for Further Research

1. A Benefit Analysis of the Navy's Drug Policy

Further research should be conducted to determine the benefits obtained from the Navy's drug policy. The Navy needs a study performed to analyze the **benefits** of rehabilitation vs separation vs education.

2. A Benefit Analysis of A Navy Drug Abuse Education Program

This research addressed only the costs of a drug abuse education program; the Navy needs a benefit analysis performed. This analysis should determine the number of service members who avoided the use of illicit drugs because of information/education received in a Navy drug education program. The benefit gained by the Navy, because of the abstinence of these service members, should then be quantified and compared to the cost to the Navy of the illicit drug use. The benefits would include the replacement costs saved, the increased productivity of the service member, and the improvement in unit morale.

3. Navy Substance Program vs Air Force Substance Abuse Program

An analysis should be conducted to compare the Navy's substance abuse program to the Air Force's program. The Navy is experiencing more than triple the past 30-days drug use that the Air Force is experiencing (4.0% vs 1.2%). The Air Force's substance abuse program is structured and conducted differently than the Navy's. The effect of the Air Force's drug program should be examined, and the reasons for the differences in drug use patterns ascertained.

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